Wastewater Operator Training Workshop Catalog
Office of Operator Training
Water Program Coordination Division

DEQ 2 Wastewater Sampling & Testing, pH & Residual Chlorine Workshop
Training Credits 1.0 Length: 2 days (8 AM - 4 PM) Fee $100.00

This workshop uses a combination of lecture, demonstration and hands-on laboratory exercises. The program covers the approved potentiometric (meter and probe) method for pH and the approved DPD colorimetric and titrimetric procedures for the determination of total residual chlorine. During the hands-on activities participants will standardize pH meters, prepare standard solutions, prepare standard curves, use statistical calculations to verify standard curve data, calculate the line of best fit equation for the data and determine pH and total residual chlorine concentrations of samples supplied by the instructor. Recordkeeping and quality assurance/quality control requirements and other pertinent information for the selected test methods will also be covered during the lecture and demonstrations. Other total residual chlorine methods such as direct amperometric determinations may also be discussed or demonstrated based on student interest and available time.

DEQ 3 Wastewater Sampling & Testing, D.O. & BOD_5 Workshop
Training Credits[1] 1.0 Length: 2 days (8 AM - 4 PM) Fee $100.00

This workshop consists of a combination of lecture, demonstration and hands on laboratory exercises. During the program participants will learn to: (a) collect valid, representative samples for dissolved oxygen (D.O.) and biochemical oxygen demand (BOD) testing; (b) perform the Modified Winkler and D.O. Meter and Probe Methods for determination of dissolved oxygen; (c) perform BOD_5 sample pretreatment procedures for pH adjustment, and residual chlorine removal; (d) select an appropriate sample dilution range based on anticipated BOD_5 levels; (e) perform seeded and unseeded BOD procedures; (f) select valid dilutions; (g) calculate accurate test results for seeded and unseeded BOD_5; (h) perform glucose-glutamic acid procedure; and (i) evaluate test data for toxicity indicators. The program will also cover sample preservation methods, maximum allowable holding times, recordkeeping requirements and quality assurance/quality control procedures for the subject test procedures. The carbonaceous BOD (CBOD) test procedure may also be discussed based on student interest and time availability.

DEQ 4 Wastewater Sampling & Testing,
Total Kjeldahl Nitrogen (TKN) and Ammonia Nitrogen Workshop
Training Credits[1] 1.0 Length: 2 days (8 AM - 4 PM) Fee $125.00

This two day workshop consists of a combination of lecture, demonstration and hands on laboratory exercises. During the program the participant will learn to: (a) prepare standard solutions; (b) perform required slope checks on specific ion electrodes and meters used in the analysis; (c) perform the approved procedure for digestion of total kjeldahl nitrogen (TKN) samples using an approved semi-micro digestion procedure; (d) perform an approved semi-micro TKN distillation procedure; (e) determine the TKN concentration of the distilled sample by the approved specific ion electrode procedure; (f) perform the direct determination of TKN on a digested sample using EPA Method 351.4; (g) determine the ammonia nitrogen concentration of a sample using the specific ion electrode procedure; (h) use statistical calculations to evaluate the validity of the standard curve and to generate the line of best fit equation for the curve; and (i) calculate TKN and ammonia concentrations using the appropriate line of best fit equations. Sample

preservation methods, maximum holding times, quality control/quality assurance requirements, recordkeeping and other related topics will also be covered. Other ammonia nitrogen and total Kjeldahl nitrogen test methods (Nesslerization and titrimetric) may also be discussed based on student interest and available time.

DEQ 5 Wastewater Sampling & Testing, Solids Workshop
Training Credits[1] 0.5 Length: 1 days (8 AM - 4 PM) Fee $50.00

This workshop consists of a combination of lecture, demonstration and hands on laboratory exercises. The participant will learn to: (a) use an analytical balance to accurately weigh selected objects to □0.0001 grams; (b) perform required balance maintenance and accuracy checks; (c) prepare equipment (evaporating dishes, filters, etc) for use in solids determinations; (d) select appropriate sample volumes based on anticipated solids concentrations to ensure filtration times and weight changes meet test criteria; (e) determine the total suspended solids concentration of a sample supplied by the instructor. Sample collection, preservation methods, maximum holding times, quality control/quality assurance considerations, and recordkeeping requirements will also be discussed. Volatile solids, dissolved solids and solids/volatile solids in process residuals and biosolids may also discussed based on student interest and available time.

DEQ 6 Wastewater Sampling & Testing, Chemical Oxygen Demand Workshop
Training Credits[1] 1.0 Length: 1 days (8 AM - 4 PM) Fee $50.00

This workshop consists of a combination of lecture, demonstration and hands on laboratory exercises. The participant will learn to: (a) prepare standard solutions; (b) select appropriate test vials based on anticipated sample COD concentration; (c) safely pipet samples and blanks into vials; (d) perform the approved procedure for the direct determination of the sample COD concentration; (e) prepare a standard curve using prepared standards and blanks; (f) use statistical evaluation techniques to determine the validity of the curve and to define the line of best fit equation for the data; (g) use the calculated line of best fit equation to determine the concentration of samples. Sample preservation methods, maximum holding times, quality assurance/quality control requirements, recordkeeping and safety considerations will also be covered. Other methods for determination of the COD concentration may be discussed based on student interest and available time.

DEQ 8 Wastewater Sampling & Testing, Ammonia Nitrogen Workshop
Training Credits[1] 0.5 Length: 1 day (8 AM - 4 PM) Fee $75.00

This workshop consists of a combination of lecture, demonstration and hands on laboratory exercises. The participant will learn to: (a) prepare standard solutions; (b) perform required slope checks on specific ion electrode/meter used in the analysis; (c) determine the ammonia nitrogen concentration of a sample using the direct readout specific ion electrode and meter; (d) determine the ammonia nitrogen concentration of a sample using a spectrophotometer and laboratory generated standards; use statistical calculations to evaluate the validity of the standard data and to generate the line of best fit equation; and (i) calculate ammonia concentrations using the appropriate line of best fit equation. Sample preservation methods, maximum holding times, quality assurance/quality control requirements, recordkeeping and basic probe care and maintenance will also be covered. Other ammonia nitrogen test methods (Nesslerization and titrimetric) may be discussed based on student interest and available time.

DEQ 10 Wastewater Sampling & Testing, Nitrate & Nitrite Nitrogen
Training Credits 1.0 Length: 2 days (8 AM - 4 PM) Fee $150.00

This program is currently under development. The program will include lecture, demonstration and hands-on laboratory exercises. The program will address sampling and testing procedures for determination of nitrite and nitrate nitrogen by approved methods. Hands on activities will focus on preparation of standard solutions, developing and validating standard curves, testing samples and associated quality assurance/quality control procedures. Other topics will include recordkeeping, sample preservation methods and maximum allowable holding times.

DEQ 12 Wastewater Sampling & Testing For Small Treatment Plants
Training Credits 1 Length: 2 days (8 AM - 4 PM) Fee $100.00

The program includes lecture, demonstration and hands-on laboratory exercises. The program will address topics of specific interest to small (<40,000 gpd) treatment facility owners and operators. Hands on activities will focus on requirements and procedures for on-site effluent and will include: (a) performing the dissolved oxygen (D.O.) test using a D.O. meter; (b) performing the total residual chlorine using a direct readout DPD colorimetric procedure; (c) performing the pH test using a pH meter and electrode(s). The program will also include discussions of determining composite sample volumes, sample collection and preservation methods for biochemical oxygen demand, suspended solid, nutrient and bacteriological samples, recordkeeping, quality assurance/quality control requirements, completion of the discharge monitoring report, selection of a contract laboratory, and sources of assistance.

DEQ 15 Extended Aeration Package Plant Operation Workshop
Training Credits 1.0 Length: 2.5 days Fee $200.00

A two and a half day program designed to introduce various methods for evaluation and control of the extended aeration package plant treatment system. Program will include lecture, class exercises, hands on activities and visits to one or more typical extended aeration package treatment plants. Topics covered during the program include treatment system components, normal operation, basic process control observations, sampling and testing (such as dissolved oxygen, pH, 30 & 60 minute sludge settleability, mixed liquor suspended solids, microscopic evaluation-and others) as well as problem identification, calculations and process adjustment. Students will perform the subject tests and use the information collected to evaluate process condition. The program will include data interpretation and basic troubleshooting. The program is recognized by the State Board for Waterworks and Wastewater Works Operators.

ENV 40 Basic Wastewater Licensure Review
Training Credits 2.3 Length*: variable Fee* variable

A three - five day program designed to review the knowledge and skills usually associated with competent operation of a Class III or Class IV wastewater treatment facility. The program assumes the participant is qualified to sit for either the Virginia Class III or Class IV wastewater license. The program is offered in cooperation with vocational centers or community colleges throughout the state. The program is approved by the State Board for Waterworks and Wastewater Works Operators.

* Course length and cost are set by the host institution and will vary from site to site.

ENV 146 Advanced Wastewater Licensure Review
Training Credits 2.3 Length*: variable Fee* variable

A three - five day program designed to review the knowledge and skills usually associated with competent operation of a Class I or Class II wastewater treatment facility. The program assumes the participant is qualified to sit for either the Virginia Class I or Class II wastewater license. The program is offered in cooperation with vocational centers or community colleges throughout the state. The program is approved by the State Board for Waterworks and Wastewater Works Operators.

* Course length and cost are set by the host institution and will vary from site to site.